

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

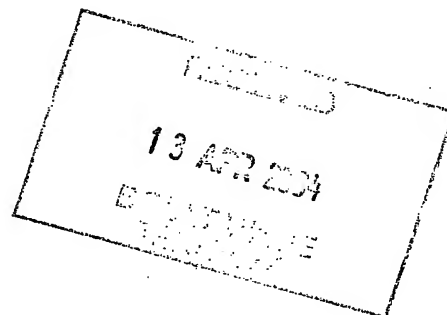
PCT

P 59840/001

MR CROSS
2 14/4/04

To:

CROSS, Rupert, Edward, Blount
Boult Wade Tennant
Verulam Gardens
70 Gray's Inn Road
London WC1X 8BT
ROYAUME-UNI



(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 December 2003 (31.12.2003)

PCT

(10) International Publication Number
WO 2004/001789 A3

(51) International Patent Classification⁷: **H01J 37/317**

Tanglewood, Gorse Lane, High Salvington, Worthing
BN13 3BX (GB).

(21) International Application Number:
PCT/GB2003/002691

(74) Agents: CROSS, Rupert, Edward, Blount et al.; Boul
Wade Tennant, Verulam Gardens, 70 Gray's Inn Road,
London WC1X 8BT (GB).

(22) International Filing Date: 20 June 2003 (20.06.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0214384.0 21 June 2002 (21.06.2002) GB

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG,
US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (*for all designated States except US*): AP-
PLIED MATERIALS, INC. [US/US]; 3050 Bowers
Avenue, Santa Clara, CA 95054 (US).

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

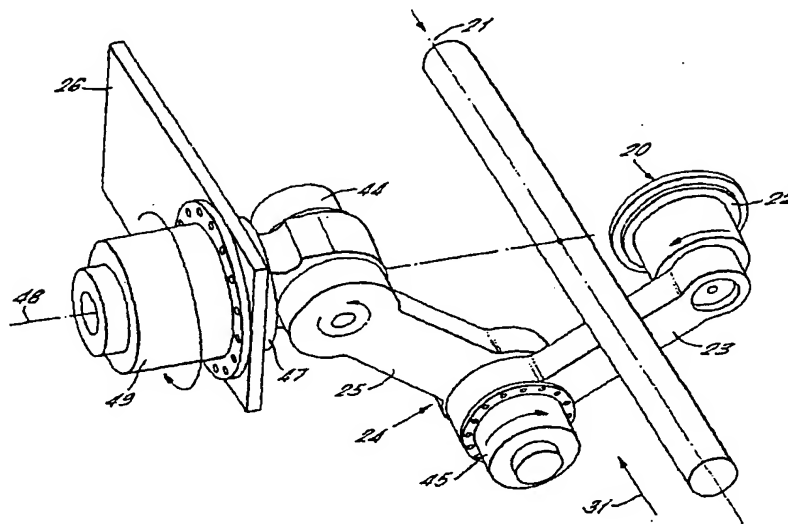
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): NAYLOR-SMITH,
Richard [GB/GB]; 24 Foxley Lane, Worthing, West
Sussex BN13 3AB (GB). DILLON, Simon, Frederick
[GB/GB]; Otmoor, 5 Trodds Lane, Merrow, Guildford,
Surrey GU1 2XT (GB). COOKE, Richard [GB/GB];

Published:
— with international search report

[Continued on next page]

(54) Title: MULTI DIRECTIONAL MECHANICAL SCANNING IN AN ION IMPLANTER



(57) Abstract: An end station for an ion implanter has a vacuum chamber (18) which receives an ion beam (19). The wafer holder (22) is mounted at the distal end (23) of a scanning arm (24) which has its proximal end (25) attached to the chamber wall (26). The scanning arm has at least two rotary joints (27, 28) providing articulation of the arm (24) to permit movement of the wafer holder in two orthogonal scan directions in a scan plane transverse to the beam path (21) through the vacuum chamber. A scanning arm driver moves the substrate holder in the scan plane in a desired two-dimensional scan pattern relative to the beam path.

WO 2004/001789 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:
1 April 2004

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/02691

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01J37/317

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01J B25J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 194 748 A (AITKEN DEREK) 16 March 1993 (1993-03-16) column 7, line 48 - column 9, line 7; figure 5	1, 11
A	US 5 898 179 A (FARLEY MARVIN ET AL) 27 April 1999 (1999-04-27) cited in the application the whole document	
A	US 5 956 077 A (QURESHI IQBAL ET AL) 21 September 1999 (1999-09-21) column 3, line 16 - line 40; figures	1-11

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

9 February 2004

Date of mailing of the international search report

16/02/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Schaub, G

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/02691

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5194748	A	16-03-1993	DE	69015616 D1	09-02-1995
			DE	69015616 T2	24-08-1995
			EP	0451247 A1	16-10-1991
			WO	9106972 A1	16-05-1991
			JP	4502534 T	07-05-1992
US 5898179	A	27-04-1999	AU	9211998 A	29-03-1999
			EP	1012865 A1	28-06-2000
			JP	2001516151 T	25-09-2001
			TW	478005 B	01-03-2002
			TW	512390 B	01-12-2002
			WO	9913488 A1	18-03-1999
			US	6163033 A	19-12-2000
			US	6437351 B1	20-08-2002
US 5956077	A	21-09-1999	US	5757419 A	26-05-1998
			CA	2223218 A1	02-06-1998